Industrial Finishing

Reg. U. S. Pat. Off.

Devoted to Product Finishing in the Factory

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THE FURNITURE FINISH OF 1934

NO. 45 RAPID COTE
NO. 50 RAPID COTE SEALER

— SPEED —

FAST SET-UP — TACK FREE 15 MINUTES
FAST DRYING — DUST FREE 30 MINUTES
FAST RECOATING — 4 HOURS IF NECESSARY
FAST RUBBING — RUB AFTER 16 HOURS DRY

— QUALITIES —

EXTREME TOUGHNESS — ALCOHOL PROOF
EXCELLENT BODY — WATER PROOF
EXCELLENT COVERAGE — PALE IN COLOR
ECONOMICAL — PRINT PROOF

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ONE COAT RAPID COTE SEALER—DRY 3 HOURS —SAND
ONE COAT #45 RAPID COTE—DRY OVERNIGHT OR RECOAT IN 4 HOURS
ONE COAT #45 RAPID COTE—DRY OVERNIGHT —RUB

GLIDDEN
EVERYWHERE ON EVERYTHING
PAINTS — VARNISHES — LACQUERS — ENAMELS

National Headquarters Cleveland, Ohio

Letters — from I. F. Readers

The names and addresses of those whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor

Luminous Paint Inquiries

We have been receiving from time to time your INDUSTRIAL FINISHING magazine and we find it very useful. In the last issue we found an article on "Luminous Paint," and we are interested in a particular controversy about methods used in obtaining this luminous finish. Will you kindly forward us the name of the manufacturer that makes this luminous paint so that we can get in touch direct with them on the question?—Q.Mfg.Co. (Casket Hardware).

In INDUSTRIAL FINISHING, on pages 26 and 27, December issue, is an article signed "Perry" referring to Luminous Paint. Will you kindly send me the manufacturer's name and address?—W.C. (Health & Accident Insurance).

Tumbling, Whirling Machines

In your March 1933 issue, we have noted an article by L.J.Barrett regarding their whirling machine. Would you kindly ask these people to let us have all details regarding this machinery and offer their different sizes. We have an inquiry for a tumbler too, and would very much appreciate, if you could let The Baird Machine Co. be aware of this also. We would like to sell this machinery as agents for the above named firms. We would like to know their commissions. — Aktiebolaget Nordstrom & Sjogren, Malmo, Sweden.

Spray Equipment

We have been told that you might be able to furnish us information regarding the names of some reliable manufacturers of spraying equipment. We are interested in spraying equipment for applying glaze to porcelain insulators. Can you give us a few names of the better class of manufacturers of this type of equipment?—A.B.C.Co. (Porcelain Products).

Graining Equipment

We note in January 1934 issue that one of your readers asks for "all of the information that you can give for graining finishes on metal."

I am sending you three prints of wood reproduction—all made with a direct offset printing process, not a transfer process. We carry every line of the wood and the tone value in same, and our new process is very fast, as all that is necessary in the use of our rolls is as follows:

Ink offset direct printing roller with the grain reproduction on the compo-

1934 FINISHES

for APPEARANCE
DURABILITY
EASY APPLICATION

HILO PRODUCTS for

Alcohol Resistant Finish—
No. 11 A. P. Lacquer

Black Work—
Black Baking Japan

Crystal Effect in Pale Colors—
Pastel Crystal

Durability Everywhere—
Baking Syntol

Hardness on Non-Flexible Surfaces—
Air Dry Syntol

Sheet Metal Products—
Slippery Baking Varnish and Enamel

Speed In Finishing—
Hi-Flex

Wood Handles—
Dipping and Tumbling Finishes

Wood Furniture—
Varnishes, Enamels and Lacquers

Wavy Design—
No. 150 Shrivel

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sition surface of the graining roller . . . and it is necessary to clean the printing roller only once a day, or it might be a good idea to clean same at noon time if the equipment is to be used a full day; however, we clean only at the time we are through graining at the close of day.

This new process is away ahead of transfer, as it is much less for first cost and cost per year, and much faster. We can furnish rolls for any reproduction of wood or special drawing or design.

We make rolls with special inlay patterns; for example, a piece of burl walnut can be set off with crossbands of zebra, if desired. We sell our appliances outright, without any royalty, and the graining material is furnished by any company the customer might wish to do business with.—X.Y.Z. (Elastic Graining Plates; Graining Machines).

Chromium Enameling

Will you also please advise us as to whether or not chromium plating causes the enamel (which is put on afterward) to change color.—O.F. & N.Co. (Decorated Metal Specialties).

Odorless Lacquer

We are interested in knowing if there is any method of eliminating the odor from lacquer fumes. We do lacquering in a booth and the fumes are expelled from the building by a fan. The odor of the fumes is objectionable to persons in the vicinity and for this reason we should like to deodorize them if possible.—K.D. Co. (Religious Goods).

Light Globe Finish

Could you tell us where we can get a waterproof paint or stain for spraying or dipping small electric globes to make them red and blue? These globes are used for illuminating Christmas trees out on the lawns or in parks where they are exposed to the weather.—N & Co. (Store & Bank Equipment).

Why Not?

You manufacturers of furniture and other finished goods, why not label each piece to show whether it is finished in lacquer or varnish (or lacquer enamel or oil enamel) so that the repair finisher at the retail store or the refinisher will know what the finish is, and can plan his work accordingly? New furniture is often slightly damaged in shipment or after it reaches the store, and the finish must be expertly repaired before the furniture can be sold. Repair finishers and refinishers can do their work more skillfully and quickly, and be more sure of themselves if they know positively what the factory finish is—whether it's lacquer, varnish, synthetic finish, oil enamel, shellac, etc. I have taken this matter up with several of the finishers and they all say it's a good idea. I would like to hear from others on this subject.—Stephie.

To Cut Finishing Costs

We have before us October 1933 issue of INDUSTRIAL FINISHING, and note the appearance of an article entitled "How One Firm Cut Finishing Costs," of which C.F.Scribner is the author. Will you please give us the address of this gentleman, as we would like to get in touch with him.—W.E.N. G. (Fixtures.)

White Chipless Enamel

We are in the market for what is being advertised today as chipless enamel for finishing our metal products in white. We have facilities for baking up to 200° F. We would appreciate receiving such information. —B. Hospital Equipment Co.

Roller Coating Machine

We have a request in our Buyers' Service Department for the manufacturer of machinery for lacquering on wood. This is a coating machine which consists of two rollers, and as the wooden strip passes between the two rollers it is lacquered on both sides in one operation. Any information you can give us as to the manufacturer of a machine of this type, would be appreciated by us.—S. I. E. Corp. (Business Directories)

Mention Automatic Sprinklers

In your December 1933 issue of INDUSTRIAL FINISHING, I read an article on page 9 entitled "A $165,000. Finishing Fire." In this article you make certain suggestions of fire prevention

(Continued on page 48)

New tools cut costs—and improve appearances

Under code operation, manufacturers are faced with higher labor costs and higher raw material costs. Without raising prices, and consequently increasing sales resistance, there are two ways to offset these increased costs:

Through greater efficiency in manufacturing, by using newly designed and modern equipment;

Through greater sales volume, which can be assisted by improved appearance of products.

The DeVilbiss Company offers you help in securing both these important advantages. Faster and more efficient finishing operations will result from the use of new, improved and modern DeVilbiss Spray-Finishing and Exhaust Equipment. Better and more permanent finishes mean increased salability. And—of course, there is no method that will produce higher quality finishes than the DeVilbiss System.

To meet present day conditions successfully, it is more necessary than ever before that old methods and old equipment be ruled out—a sound reason why many leading manufacturers are now modernizing their finishing departments by making DeVilbiss installations.

If you are using old-fashioned finishing methods, or old-style spray-finishing equipment, it will pay you to investigate the impressive advances made by DeVilbiss. Consult your local DeVilbiss representative; you will find him well qualified to make valuable recommendations in all matters relating to the most efficient and modern methods of spray-finishing. See him now, or write us direct.

THE DEVILBISS COMPANY · TOLEDO · OHIO

New York Philadelphia Cleveland Detroit Chicago St. Louis San Francisco Windsor, Ontario

Direct sales and service representatives available everywhere

DeVilbiss

Studebaker St. Regis Brougham

Auto Colors and Finishes

as observed this year at the New York Automobile Show

by George D. Hirst

THERE IS considerable opalescent finish—secured as one salesman was heard to tell his prospect, by "spraying white lacquer over the color." And there is a really conspicuous example of the finishing art in a bright yellow Packard roadster of striking contour. Packard also has a number of custom-made bodies on display in bold colors, and with "broken" running boards in the cradled custom manner. The sportier cars take to sportier and more conspicuous colors. But family cars are no longer black. I did not notice a single car finished in black in the entire show (although some are standard), whereas a few years ago, after a long period of color, black was considered quite in the mode.

In the low-priced range, Chevrolet offers a variety of colors. A 4-door sedan is garnet with sand-colored mohair or cord upholstery. The coach is deep blue; a roadster is light tan; a town sedan is medium tan; a coupe is Brewster green; a sport coupe is slate gray; a sport roadster is dark red.

Oldsmobile shows garnet in its 5-passenger 2-door sedan with a particularly striking 5-passenger coupe in tan with an orange cast. A 2-passenger coupe is a smart light tan, while other models of the 8-cylinder line are of the more conventional shades of blue and green.

One of the most effective looking cars at the show is a 5-passenger La Salle coupe in bright red. The 2-passenger convertible coupe in this line is a tangerine shade—very effective for this type of sporty car. Another striking job is a 2-passenger coupe of medium blue. These cars have disc wheels with wide chromium hub

caps. Spare wheel and tire are carried in the rear, concealed entirely in a special compartment.

Of course, in the higher priced brackets, colors are largely optional without extra charge, but with some delay in delivery for certain unusual shades. The La Salle line, in my opinion, shows considerable taste for all its newness. Louvres, incidently, are small cupped portholes.

Buick runs the entire color gamut, with one particularly noteworthy convertible phaeton in a shade that approximates lavender. Lincoln shows a sport coupe in a light shade of gray. All Auburn cars on display show the opalescent finish. Reo likewise uses the opalescent finish on a lavender 4-door sedan, which is attractive.

New La Salle coupe with Fleetwood body streamlined in every detail. Note the chrome-plated chevrons on the front fenders and chrome trim strips between radiator and fenders. The hood, with newly designed hood ports, extends nearly to the windshield. Chrome striping runs the length of the body. Chrome mouldings on the running boards.

Nash is courageous in the use of color. An Ambassador eight 5-passenger brougham with the 142-in. wheelbase is almost a tomato red. Another 5-passenger brougham is robin's egg blue. A coupe is yellowish tan. A 5-passenger sedan is taupe, and a 5-passenger town sedan is wine red with a purplish cast. Rear-wheel shields are furnished at additional cost. These supply a housing for the rear wheel similar to those found on airplanes. Of its practical usefulness, deponent saith not. However it forms more surface requiring more careful finishing.

Nash also emerges with a new lower-priced car known as the Lafayette. A 5-passenger 2-door sedan is medium green with wide pan chromium hubs. A 5-passenger 4-door sedan is garnet; a roadster, medium blue; and a touring sedan, medium tan.

Cadillac shows a magnificent sedan in green that attracts considerable attention; also a bright red roadster.

Studebaker, like Nash, strikes out courageously in the color realm, showing a striking tomato red coupe, a beige 4-door sedan, a bright yellow roadster and a robin's egg blue 4-door sedan streamlined back to a point in the rear, with rear wheels fendered to the hubs.

Hupmobile's display is interesting from the finishing viewpoint in that emphasis is seemingly laid on the pastel or boudoir shades. Like Auburn and some of the Dodge and Reo models, they are mostly of opalescent finish. Hupmobile carries the streamline back from the headlights which are integral with the hood. Incidently the more modernistically designed cars have chromium plated tubular seat frames.

In general then, it may be said that the 1934 Automobile Show strikes out for startling color effects, uses the opalescent or iridescent finish more commonly, and covers more of the chassis with aluminum or steel—and therefore with color. No crinkle or crystal-

Hupmobile Aerodynamic Type Sedan

A New Ultra-Modern Design for 1934

line finishes were seen. Large chromium hub caps expose only small portions of spokes for contrasting color work.

In general, too, it may be said that most of the manufacturers seem to emphasize the more superficial and spectacular aspects of the motor car. The durability and lasting quality of materials and workmanship seem to this writer to be timely considerations of utmost importance. The sensible buyer today is more interested in knowing how much longer the car and its finish will stand up in use, than he is in a jumbo-type airplane speedometer and a radical change in design. Yet it cannot be doubted that the more superficial aspects are important, as witness Oldsmobile which made a startling sales record in 1933 largely, no doubt, on the basis of its style appeal.

But, as style manufacturers in other lines know, style is a fickle master. The fact remains that in the long run, quality and workmanship win. This applies to surface finishing as well as to internal structure; and the former is so important that Packard seems to have thought it worth while to engage a large part of the lobby of the Roosevelt Hotel in New York for a color and finishing exhibit to show how carefully and with what minute preliminary research this company goes into a vital branch of motor car art—the color decoration.

Automotive Metal Cleaning Finishes, Colors and Lacquers as Exhibited by Packard Co.

In one booth 33 miniature doors were displayed, each showing successive steps in the creation of the finished product. A small blast-cleaning machine permitted the visitor to blast-clean a small sheet of steel. This, it was explained, takes the place of the acid bath for removing impurities in the original greasy film on the "raw" metal. Placing the steel under the microscope the visitor could see how the surface of the metal was affected by this blasting. Millions of hooks and claws, so small they could not be seen with the naked eye, were visible. Upon this surface the paint is "hung." This roughened surface, it was explained, holds the paint tenaciously; 32 subsequent processes in surfacing and coloring were then shown.

Twenty-two basic pigments, from which nearly 100% of motor car colors are derived, were on display. The blending and mixing of these basic pigments into dozens of tints were shown.

An interesting exhibit revealed a device that matches a color with the proper paint in perfect exactitude. This has been found useful in meeting the color sample furnished by the buyer.

One display showed cars painted as famous masters would have had them done—judging from the tones employed in their masterpieces. The theoretic predelictions of Whistler, Rubens, Reynolds, Cellini, Gainsborough (the famous Gainsborough blue, of course), Raphael, Velasquez and others are all applied to the Packard with interesting results.

The visitor was permitted to choose from among 500 shades, those which appealed to him and have them reproduced in the combinations he preferred on a perfectly proportioned silhouette.

A special demonstration was given by Herbert T. Strong, the famous color expert. On a screen, by means of delicate devices, were projected color combinations of almost indescribable tones derived from drops of water and oil and from fragments of common objects. Showcases revealed some of Nature's color exhibits—stones, insects, feathers, flowers, leaves, etc.

An instructive display showed by comparative samples: 1) an obsolete varnish abolished for lack of durability; 2) a regular lacquer finish used because of its permanency; 3) an early iridescent finish abolished for lack of durability; 4) the present iridescent finish obtained with metals and permanent lacquer; 5) a crinkle finish—a possible choice of the future; 6) a crystalline finish—another possible choice of the future.

A large display with labeled test tubes revealed what enters into the make-up of automotive lacquer finishes, namely, various lacquer ingredients, lacquer thinners and tinting colors.

In general, the object of the display was to interest the intelligent public in the rather non-technical aspects of industrial finishing. The too abstruse or technical reaches of the field were avoided; exhibits were attractive and educational without being too dull to the average person. Visitors were evidently curious to learn more about paints, colors and processes.

Several finishing materials have been brought out which are really resistant to gasoline, oil, alcohol, brine, alkali and various poisonous fumes.

Research on Frits & Enameling at Mellon Institute

Dr. Edward R. Weidlein, director, Mellon Institute of Industrial Research, Pittsburgh, Pa., has announced that the O. Hommel Co., of Pittsburgh, has founded an Industrial Fellowship in the Institute for the purpose of conducting scientific research on problems of enamel technology. In particular, it is expected that this Fellowship will acquire technical information, through its investigations in the laboratory and in plants, supplemented by the experience of specialists in the Hommel and cooperating organizations, including Enamelers' Guild, of Pittsburgh, that will enable it to serve as a clearing-house of dependable facts regarding frits and their industrial use. Research of the Fellowship will be published for the benefit of enamelers; and advice and information on enameling, and assistance in solving plant problems and in making evaluations or other practical tests of frits, will be extended gratis to companies that wish such technical aid.

The applications of the frits produced by the Hommel Co. will be studied extensively, and any problems that are encountered in their use will be investigated thoroughly by the Fellowship. It is hoped by this donor that the new knowledge that will result from this work and from the other activities of the Fellowship will advance scientifically both frit production and enameling practice.

Rubbing AND Polishing Machines

This equipment includes stationary machines for rubbing the flat tops of furniture, and a variety of portable machines in both reciprocating and rotary types for performing rubbing and polishing operations on many different kinds of high class products.

BETTER AND FASTER methods of rubbing, polishing and buffing are claiming the attention of many manufacturers whose products require a smooth, lustrous finish. The mechanical equipment available for this work is divided into two general classes —stationary and portable. Both air and electricity are used as motive power. The choice of the particular type of machine depends largely on the material to be worked on, area and shape of surface, size of the units and physical shop conditions.

In the stationary class a long-stroke rubbing machine is adjustable to rub flat surfaces from 1 to 8-ft. in length, and widths up to 3-ft. wide. These machines are especially adapted for rubbing tops of desks, tables, dressers, chiffoniers, wardrobes and buffets, or any flat surfaces. Any thickness from ⅛ to 34-in. can be rubbed, as the table can be lowered to the floor. Special machines of this same type are built to rub stock up to 49-in. high. Small table tops can be rubbed two at a time; or, if they are not in excess of 24-in. in length, by adding an extra traveling head, three tops can be rubbed at once.

The other type of machine in the stationary class is the buffing wheel operating on a horizontal spindle, similar to a grinding wheel. This type of machine is used for smoothing (grinding) or burnishing raw metal surfaces, polishing plated ware and for the "brushing" operation in the vitreous enamel field.

Portable Machines—Several Types

Portable polishing and buffing equipment includes a greater variety of machines with many refinements of construction and higher speeds. Being portable or

semi-portable, these machines embrace a wider field of utility than either of the stationary machines. In the portable group, the air-operated rubbing machine with reciprocating pads is popular among finishers of wood products, particularly furniture, office desks, radios, and steel filing equipment.

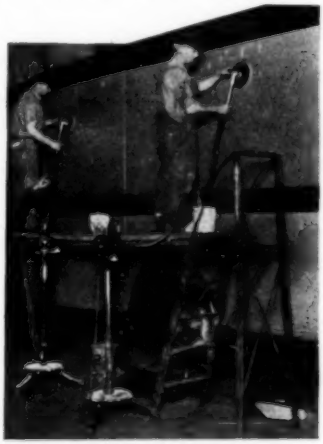
This machine is especially adapted to rubbing comparatively small flat surfaces. In the larger machines of this type two square felt pads, operating with a rapid reciprocating motion, perform the rubbing operation. The weight of the machine is such that in rubbing the surface, very little pressure need be exerted by the operator. Although the felt pads are fairly resilient, a perfectly flat surface is absolutely necessary to do satisfactory work with the larger machines. Care must be exercised when rubbing the surface close to the edges to prevent cutting through the finish. Fine sandpaper may be attached to the pads of this machine for sanding the finish between coats. Some concerns use the smaller machines for rubbing the final lacquer coats with pumice and water on both flat and slightly curved surfaces. Satisfactory rubbing of slightly curved surfaces is made possible with flat felts on account of the small size of the felts and the light weight of the machine. By this means, the machine can be easily and readily manipulated, and the pressure regulated so as not to cut through the finish.

Rotary Type Machines

Another type of portable machine for sanding, cleaning, rubbing, polishing and buffing carries various types of rotating discs which range from about 6 to 10-in. in diameter. The face of the disc performs the work, giving a continuous rotating motion which, of course, must be skillfully guided over the surface by the operator. In most of these machines a small inclosed motor is closely geared to the rotating disc. A convenient handle is provided for the workman, and an extension cord connects the motor to a plug-in socket. A lambswool polishing pad is generally used for cleaning and polishing lacquered finishes to a high luster.

Flexible-Shaft Driven Machines

Flexible shaft equipment assumes an important place in the group of portable rubbing and polishing machines. These machines also carry rotating discs and are available in units to be mounted on work benches or floor pedestals, or they may be suspended from the ceiling. The bench type mounting is useful for work that can be easily and conveniently brought to the machine. The pedestal type is particularly adapted for use on conveyors or



Men at work using flexible-shaft driven, rotary type, polishing machines.

production lines, or for exceptionally large, heavy or unwieldly work. The overhead suspended type is designed for service on conveyors or production lines, and where it is necessary or desirable to have a clear floor space.

The three kinds of units are divided into two distinct types—the countershaft type and the direct drive. The countershaft type is suitable for different classes of work and different sizes and kinds of wheels, where several different rates of speed are necessary. This type of machine has a countershaft driven by a short belt from a pulley on the motor shaft. Different speeds are obtained by shifting the belt or by transposing the two pulleys. The difference in the speed represents the difference between what is commonly called good work and poor work.

The second type of flexible-shaft driven machine is adequately described by its name—direct drive. Two speeds, one slow and the other fast, are possible on the direct-drive machine through the use of two right-angle heads. This makes the direct-drive machine adaptable to both polishing and buffing finished surfaces—polishing being done at the lower speed and buffing at the fast speed. Of course it is necessary to use wheels of such a diameter that, at a given speed, satisfactory results will be produced.

Polishing compound, mixed a little heavier than cream, is poured on the cloth-covered wheel and then applied to the finished surface. These wheels are available in several diameters, to accomodate different classes of work. The flat or rounded face of the disc (not the rim) makes contact with the surface being polished.

Buffing wheels, although similarly designed, have a felt pad for a base. The felt is not as resilient as the sponge rubber used in the polishing wheel, therefore it offers a more rigid base which is necessary for buffing. A circular sheepskin cover is slipped over the felt pad and is held in place by a draw string. The sheepskin-covered wheel is used dry to buff or polish the finished surface. A small quantity of ordinary cornstarch, sprinkled on the sheepskin, absorbs from the polishing compounds the grease picked up by the rotating buffing wheel.

Flexible shaft polishing and buffing machines are powered by motors ranging from ⅛ to 1-hp. Four speeds—875, 1300, 2350, and 3500-r.p.m.—are possible in the countershaft type machines. Speed controls in right-angled heads for use on direct-drive machines are made to fit individual requirements.

The Metallizing Co. of Los Angeles has perfected guns and equipment by which they take metal in wire form and feed the wire into the metallizing gun where it's melted and sprayed like paint under such pressure that it adheres firmly to the surface of the base metal or material.

Cost & Production Book

A new cost and production handbook containing 28 sections, 1600 pages, 700 tables and working forms, has just been published by The Ronald Press Co., 15 East 26th St., New York, N. Y. This remarkable book is a master work of many able experienced men occupying responsible positions in the country's foremost manufacturing establishments. Durably and attractively bound it's worth, to men who can use it, more than ten times the quoted cost of $7.50. The book is edited by L. P. Alford and a board of 80 authorities and expert specialists.

« Protective Coatings » for Metal Work

by E. A. Hurst, N. A. & M. E.
President of Artic Chemical & Combustion Engineering Corp.*

A PAPER read at the September meeting of the Electrochemical Society, in Chicago, was given wide publicity in technical magazines throughout the United States. It refers specifically to tests made over a period of years in England, the results of which fall under four headings.

1—Nature of the metal.

2—Presence of separating materials between metal and paint, such as mill scale, rust, water or salt.

3—Character of paint as determined by the nature and quantity of the pigment, the oil, the thinner and the dryer.

4—Character of the atmosphere, water or soil to which the painted metal is exposed.

The metal prime coat seems to evolve around red lead, red oxide, linseed oil and turpentine, with a proportionate amount of dryer. This combination has been in use and apparently an accepted fact for a period of over 50 years but during all this time statistics compiled by the Department of Commerce inform us that the annual wastage due to rust and corrosion reaches the stupendous figure of over $300,000,000 a year. This enormous destruction resulting from rust and corrosion is steadily increasing in proportion to the amount of steel and concrete used in building.

Paint technicians who have carefully studied this tremendous problem agree that the various types of steel and iron, ranging from superior copper steel and electrolytic iron to a steel containing a high percentage of carbon and manganese, in their turn have different reactions on prime coating.

The reactions as far as moisture, humidity, acids, gases and salt spray have also been carefully noted.

During the last few years chemists have made exhaustive tests to find the reason why the proverbial red lead has fallen short of the mark as a rust preventative. Experiments along these and other lines are well worth citing.

Test Number 1

Several pieces of steel, cut from angles, shapes and plates, were used. The metal was thoroughly wire-brushed and in some instances sandblasted. A good coating of red lead and linseed oil with turpentine was then applied, and the metal was exposed to the elements on the roof of a building in the heart of an industrial area and near salt water.

*Brooklyn, New York.

After a period of two years, it was found that the linseed oil had completely decomposed, leaving a film of red lead and lead soaps containing a high percentage of moisture. The moisture in the red lead acted as an electrolyte, wherein electrolysis of the exposed molecules took place, causing rust and corrosion.

It was further found that the lead soaps emulsified and became soluble in water and washed off, leaving the surface of the metal exposed to the atmosphere.

Test Number 2

The combination of red lead and iron oxide (Indian) with linseed oil was used. This combination proved to be superior both chemically and mechanically to straight red lead with linseed oil.

Micro-photographs revealed that the small particles of red oxide, in combination with the red lead, materially helped to seal the open pores left in the linseed oil.

An examination two years later demonstrated that moisture had penetrated to the metal and corrosion was taking place, but considerably less than with the straight red lead.

Test Number 3

A number of pieces of metal were coated with red oxide used with a non-porous vehicle. The surface of this metal had previously been allowed to oxidize and had a thin film of rust. A suitable type of thinner was used to carry the vehicle and to penetrate into the film of rust.

This combination of red oxide, the non-porous vehicle and the thinner on oxidation formed an insulation around the particles of rust, which were bonded to the metal, thereby excluding any further attack of oxygen, and eliminating any possibility of rust or corrosion.

When an examination was made of this test two years later the coating was found to be in perfect condition with no breaks or traces of moisture, in spite of the outside exposure to extreme heat and cold, and the rays of the sun.

The results of this last test proved so satisfactory that several thousand gallons of this combination were manufactured and sold both in the industrial and marine fields. This further proved the practicability of the coating inasmuch as it was subjected to abrasion and general hard working conditions.

Test Number 4

Chromates and linseed oil were combined in this test. The results this time were much the same as in the case of red lead and linseed oil, except that the former seemed to have slightly more lasting qualities.

Test Number 5

This test dealt with metallic zinc dust, 99% pure, and linseed oil. This combination when applied to metal gave an unsatisfactory result, due to the porosity of the linseed oil vehicle.

Test Number 6

This test was made with a combination of metallic zinc dust and vegetable gums, on pieces of clean steel and iron. The result of this test was highly satisfactory.

It was noted that the vehicle formed a non-porous film, and that the metallic zinc dust became homogeneous with the metal. This combination was tried on several ocean-going vessels where the exposed metal had been wirebrushed and apparently all previous paint coatings had been removed.

After a period of approximately six months the coating began to peel off in places and on microscopic examination small particles of old paint were found to be in the pit holes, thereby preventing adhesion between the metallic zinc coating and the metal to which it was applied.

Test Number 7

Performed with metallic zinc paint; sandblasted steel test panels were given one or two coats, brushed on. No trouble or difficulty was found in the brushing qualities, and the coverage was very good.

A high-power mercury quartz lamp was used in this test, and it was noted that chalking and crazing were absent. The test was not carried to completion owing to lamp trouble, but the zinc paint showed up superior to red lead.

A salt spray test was also applied, a 20% sodium chloride solution being employed. Test pieces were kept in cycles consisting of 8 hours spray and then 16 hours saturated damp salt atmosphere. Under this treatment the samples stood up over 350 hours of spray plus 1050 hours of dampness, the difference in ratio due to week-end periods, without any indication of failure. There was no indication of rust creeping under the coat from the unprotected edges. Blisters, cracks, checking, crazing and chalking were entirely absent. On the other hand, red lead coats have failed in 24 hours of spray, and 200 hours is a good life for a top coat.

A test piece was subjected to weathering cycles, a cycle here consisting of what is specified in the accompanying table.

Damp dark air @ 100° F.	(hrs.) 16
Ice water	1
Salt spray (20% sol.)	7
Cool damp dark air	16
Dry ultra violet light	1
Moist ultra violet light	7

Typical Weathering Cycle

Under this treatment, the piece in question stood up for 25 cycles, there being no indication of failure, with the exception of a slight uniform lightening of color.

In the abrasion test, which was also applied, the Gardner emery abrasion apparatus was used and the life of the zinc coating was far superior to anything previously tested.

These exhaustive tests were continued for some time in order to prove further the efficacy of the metallic zinc paint in question.

After the sample had been in salt spray 900 hours and in damp salt atmosphere about 2700 hours, an examination under the microscope showed that the center of the panel was in very good condition. There was a tendency of the rust to creep *over* the paint at the edge of the panel. With the exception of a few spots at which the top coat of paint had shrunk away from the bottom coat, the panel was in good condition.

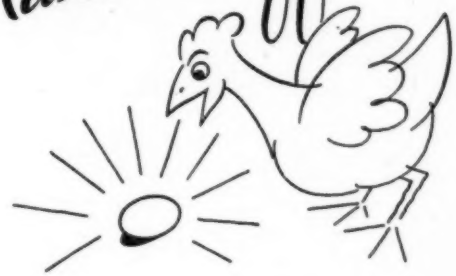
Examining Test Panel

After the test piece had undergone 56 weathering cycles in all, the condition of the sample was as follows:

The central portion of the panel showed a few cracks but did not exhibit any rust coming from these cracks. The edges were considerably discolored due to the rust creeping *over* the paint, but when the rust was scraped away, a fair coating of paint was still seen protecting the metal. This sample was deeply scratched in the early part of the test, to allow the coating to disintegrate and the rust to creep under the coating if pos-

FRESHNESS

Makes a difference



ALL shellacs are not alike. They vary in quality. And they vary in effectiveness in proportion to their freshness.

Du-Pros is made only from pure shellac gum and Government test alcohol. To insure quick drying, easy sanding and a tough, durable finish, every gallon of Du-Pros Strictly Pure Shellac is freshly made when shipped.

Other fine Day finishes are enamel, stain, filler, sealer and lacquer.

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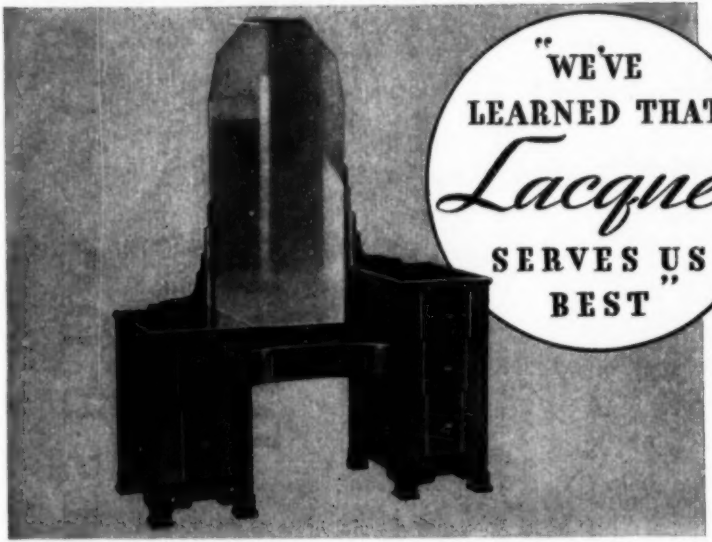

"WE'VE LEARNED THAT *Lacquer* SERVES US BEST"

... *says* Mr. NORDBY *of the Nordby Furniture Co.*

Well designed they are, and gleaming with a beautiful, satiny finish, these bedroom and dining room suites of the Nordby Furniture Co. of Sheboygan, Wis. On the dealer's floor they

Nothing can take the place of LACQUER

1 Lacquer dries rapidly—in minutes, not hours.

of the Nordby Furniture Co.

Well designed they are, and gleaming with a beautiful, satiny finish, these bedroom and dining room suites of the Nordby Furniture Co. of Sheboygan, Wis. On the dealer's floor they move quickly, because of this beauty appeal; in the home of the user they render lifetime service, at least in part due to their lacquer finish. ● Says Mr. Nordby: "Yes, we use lacquer exclusively. First of all, because it gives our furniture a beauty and quality appeal to which the public responds, without burdening us with excessive cost. In addition, it permits maximum production in minimum space. Lacquer dries so rapidly, that the drying facilities needed with other finishes are not necessary here. It dries so hard, that it permits stacking or shipping practically as soon as finished, without fear of 'printing'. And it requires only a minimum of rubbing. What's that? Oh, sure; but we've learned that lacquer serves us best, and we'll stay with it."

Nothing can take the place of LACQUER

1 Lacquer dries rapidly—in minutes, not hours.
2 Lacquer dries hard—and remains so.
3 Lacquer is print-proof.
4 Lacquer is stable in the drum or can; no seeds; no granules; no "skinning."
5 Lacquer produces a clean surface, free from nibs, grit, and dirt.
6 Lacquer does not water-spot—it is washable.
7 Lacquer cleans more easily—it is alkali as well as acid-proof.
8 Lacquer is stain-proof.
9 Lacquer will not wrinkle—all coats unite into one uniform film.
10 Lacquer "touches-up" perfectly.
11 Lacquers can be "tailor-made" to fit many special uses.
12 Lacquer is longer-lived and retains its beauty.

COMMERCIAL SOLVENTS CORPORATION
230 PARK AVENUE · NEW YORK, N. Y.
Plants at TERRE HAUTE, INDIANA and PEORIA, ILLINOIS

While Commercial Solvents Corporation does not manufacture lacquer, it supplies the coatings industry with important materials—Butanol and Butyl Acetate C. S. C.—which are determining factors in lacquer quality.

BUTANOL *Assures* LACQUER QUALITY

sible. An examination of this scratch showed it to be filled up with a rather high ridge of rust. The coating did not disintegrate around the scratch.

A portion of the panel was subjected to the light and water test. It was placed under water so that the ultra-violet light would play upon it. This test was continued for 180 hours, and the coating stood up very well under this severe treatment. It cracked but slightly and only exhibited blisters due to the second coat separating in spots from the first coat.

Value of Paint Tests

There is no doubt, as a result of thorough tests of this kind, that combinations of technical coatings can be manufactured and applied that will eliminate rust and corrosion for a period at least twice as long as that of red lead, even though red lead has in the past been used as a prime coating for all types of metal.

It is obvious that the paint manufacturer is not in a position to dictate to the steel manufacturer as to the component parts of the steel. Protective coatings therefore became a paint manufacturer's problem, in the way that the lubricating problem was solved by the oil refiners and not necessarily by the automotive engineers.

Much has already been accomplished, however, for technical coatings can be built to suit any purpose from a food-processing plant to a steel bridge. This includes prime coatings such as are used in the automotive industry.

Tests have demonstrated that the time to prime coat steel is soon after oxidation takes place and loose mill scale has been removed. This should be done at the point where steel is manufactured, or as soon as it arrives on the ground for erection. This is especially necessary in the case of box girders or in parts of steel structures that are inaccessible after fabrication.

Many instances have come to light where poor prime coats have caused and accelerated rust and corrosion. It is therefore essential to apply a prime coat that is of the finest quality and that is the proper one for the specific purpose to which the metal will be put.

Improper undercoatings are the most expensive.

A new foundation finish for wood serves not only as a stain-sealer, but also as a shading stain —all in one spraying.

Indianapolis Varnish & Paint Co. Has New Personnel

The Indianapolis Varnish & Paint Co., Inc., 131 N. Pine St., Indianapolis, Ind., which last July succeeded to the business of the Indianapolis Varnish Co., announces that Geo. C. Miles, who was connected with the Lilly Varnish Co. for a number of years, is now general manager. The company will continue to manufacture G Flat Varnish, which they introduced last year. They have added equipment for making paints and enamels.

In checking over their varnishes they decided that many of them were not suitable to the present day industrial users, so they secured the services of W. A. Waldie as chemist and production manager.

Mr. Waldie, since his graduation from Harvard in 1908, has served as research chemist of the Glidden Co., production manager of Thibaut & Walker Co., and director of research and production manager of the lacquer and varnish departments of the Ohio Varnish Co. After ten years with that company he engaged in consulting practice on paints, varnishes and lacquers. Mr. Waldie's experience will enable the Indianapolis Paint & Varnish Co. to manufacture high grade uniform products for the industrial trade.

The many friends of H. C. (Scully) Davitt, formerly with the Lilly Varnish Co., will be pleased to learn that he will handle the Indiana sales for this company.

Furniture Show Finishes

As Observed at the Grand Rapids Exhibition

by J. C. Hertstein

Outstanding Finishes:

Bridge set —white table and chairs upholstered in red. Very Attractive.

* * *

Bedroom suite, maple finished to fruit wood; hardware to match this classic modern. Decorations, bone white.

* * *

Bedroom suite—early American pattern; Monterrey (Mexican) finish, oyster white. Antiqued. Decorated with green and red figures, also of Mexican character.

WHAT'S NEW this year? Without going into details and wasting words with endless descriptions, I shall try to tell you briefly what looks particularly good this year at the Grand Rapids Furniture Exhibition.

Bridge and Breakfast Sets

A line of bridge and breakfast sets caught my eye as soon as I entered the main lobby. The particular modern adaptation of an old cobbler's bench, finished in gray enamel with a removable glass server trimmed with yellow; rim finished gray.

These were available in excellent and unusual color combinations such as white and red, black and red, white and yellow, etc. One of the attractive bridge sets in this complete line, which included many odd pieces, was finished in white—that is the table and chairs were white with upholstered red seats. Other combinations were brown and yellow, white and yellow; one suite was finished entirely in white with white leather backs and seats in chairs tacked on with black tacks.

Kitchen Cabinets

In the line of kitchen cabinets I was particularly struck by an oak cabinet of cathedral design, colored to Pickwick green shaded brown, with black and gold striping. Another one of this same design was colored to silver gray shaded green and trimmed with green and black. Enameled cabinets were about the same as usual.

Upholstered Line

In the upholstered line I was impressed by the appearance of the leather upholstered chairs with frames finished to a bone white; tables in bone white matched these chairs. Odd chairs, leather upholstered with mahogany finished frames, were also prominent.

Colonial Designs

Most of the Colonial pieces and Colonial breakfast sets were in Concord maple. Bedroom suites of the conservative class were

finished as usual in both walnut and mahogany, and were about equally prominent as to the choice of these two finishes.

Lawn Furniture

A line of lawn furniture, with frames finished in a variety of enamel colors, were mostly covered with dark cretonne prints of unusual attractiveness. A color combination of green and yellow was perhaps the one mostly in demand.

Dining Room Suites

A dining room suite designed to suit the particular manufacturer's idea—a combination of Duncan Phyfe and Sheraton lines, finished to an aged mahogany, slightly shaded, yet showing the grain of the wood clearly, with the table legs very gracefully sloped, and having authentic Colonial hardware—could be called remarkably classy.

Another was of 18th Century pattern, Old World mahogany. The door panels in the cabinets were crotch mahogany. One of these was an English design partly Jacobean, finished walnut, with an oak band around the dining room table. A classic in aspen wood was more or less a "talked-about" suite—should you desire this type of furniture.

There was a bedroom suite in aspen; also one in enamel and rosewood, trimmed with satinwood, with a dressing table having glass trimming, mirror and top. One of these was trimmed in aspen, with gold stars for knobs.

Mahogany Popular

A dinette suite in aged mahogany with Welsh cupboard brought to attention again the fact that this aged mahogany finish has, to a considerable extent, replaced the walnut of several years ago. Another indication of this was a bedroom suite in Colonial design, and this too had an aged mahogany finish with the authentic Colonial hardware to match.

Most of the occasional tables were finished in mahogany, as were most of the upholstered frames this year.

Miscellaneous Pieces

Buyers were attracted to a line of "Modified Modern" design consisting of breakfast suites, coffee servers (highball servers), desks, secretaries and odd pieces. These were finished in American walnut, using only selected veneers difficult to obtain in any quantities because of their unusual grain. The finish was a lacquer, rubbed down. Most of the pieces were trimmed with black enamel giving sufficient contrast and yet excellent harmony. The walnut chairs were upholstered with seats of black leather fabricoid having a striped effect or appearance. One of these unusual walnut desks had gold and black pulls.

In a line consisting of spinet desks, servers, lamp tables, magazine tables, telephone stands and many other similar articles, one found mostly all mahogany finished in what is generally called "Old World mahogany."

R. W. Mitchell Visits Europe

R. W. Mitchell, Ph.D., Technical Director of the Dif Corporation and Magnus Chemical Company, South Ave., Garwood, N. J., left on the Ile de France of the French Line, on December 16th for a six weeks' business trip through England, France and Italy. He will visit industrial plants and make a study of cleaning equipment, materials and methods in use among leading European manufacturers of metal goods and allied lines. Dr. Mitchell will return late in January on the "Rex" of the Italian Line.

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STAIN

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Stain Powders,
Wood Fillers
#1900 Wateroil Rubbing Oil
Finishing Waxes
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A *positive* water stain in a non-grain-raising solvent.

Dries in thirty minutes,—does not bleed.

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Unquestionable Quality Wood Finishing Supplies

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M&WCo 1876

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The NEW ready mixed *Silver Bronze* Finish eliminating handling of bronze powder separately. Merely add thinner and spray.

An ideal lustrous *one coat* inexpensive finish for metal stampings or novelties.

Available in Silver or Cadmium shades as well as colors.

Metalustre will add distinct sales appeal to your products.

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Los Angeles Office & Warehouse
2416 Enterprise Street

The border of this advertisement is a photographic reproduction of CHECKLAC.

Crystal Japan Finish on metal

by C. F. Scribner
Consulting Industrial Engineer

AS A MEANS for the elimination of filler application and the usual follow-up hand-sanding before subsequent coats of the finishing material can be applied, baked specialty finishes, with crystal japan as an outstanding example, are finding increasing use. This material is available in a limited number of colors, but black is the most popular. Dull black gloss is perhaps a better name, since a high gloss effect cannot effectively be obtained with this particular finish.

Crystal japan has the peculiar property of making the surface of a part to which it is applied appear smooth, when as a matter of fact it is rough. The effect created by the varying and alternating dull and shiny spots, which are characteristic of the finish, is not the chief reason for its popularity; it is principally because no filling or surfacing operations are required.

Preparation of Surface

The customary procedure is to apply the material directly to a rough surface, after which the finished article presents a smooth appearance, without any preparatory steps having been taken aside from rubbing off the more pronounced high spots. It is not necessary to eliminate all the imperfections in the metal, or on the surface. Because of this and because of the remarkable "masking" properties of crystal japan finish, a single coat will give satisfactory results.

Many interesting features make this crystal finish attractive. It is easy to apply; it is durable and has a good appearance. The finish is a raised textured one, not smooth, this being the reason the surface needs no special preparation except that it be free from dirt and grease.

This is a radical change in the finish as a means of cutting costs, rather than curtailing the amount of work ordinarily necessary to obtain a smooth gloss finish. Assuming the former finish were smooth and glossy, the radical change suggested would be the dull appearance of the crystal finish, as well as its novel and attractive design.

Crystal Size Controllable

There is another interesting design feature peculiar to baked specialty finishes which should be recognized. That is the case of obtaining and controlling the size of the crystals which are formed. One may have a fine-mesh crystal for small parts or surfaces or large-mesh crystals for large parts. Should the part be so designed, or of such shape as to permit it, a combination of the two sizes may be used. The finer mesh crystals

MAJESTIC AUTO RADIO finished with S-W KEM ART METAL BLACK

Sherwin-Williams Kem Art Metal Finish Gives Rich Eye-Appeal at Practical Cost . . .

● Daily the list of nationally known manufacturers of quality products using Sherwin-Williams Kem Art Metal Enamel grows larger. The Majestic Twin Six Auto Radio, made by Grigsby-Grunow furnishes a striking example of what this new baking enamel is accomplishing for manufacturers and industrial finishers.

Sherwin-Williams Kem Art Metal Enamel is a chemically evolved Baking Enamel — which offers advantages and economies heretofore unobtainable:

1. One coat produces a tough, durable finish, without the use of undercoater. Easy application.
2. Quick bake — from 1 to 1½ hours at 200°F.
3. Any type of oven may be used.
4. Pastel shades as well as dark colors.
5. Obliterates small imperfections on low cost metals.
6. Adaptable to large or small production schedules.

Get complete information about this new finish that is creating extra sales for established products and opening markets for new ones. Sent without cost or obligation. Write The Sherwin-Williams Co., Dept. 617, Cleveland, Ohio.

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Equip your car with a Majestic Twin Six Auto Radio!

SHERWIN-WILLIAMS INDUSTRIAL FINISHES

1643
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will be appropriate for the upper or small part, and the large mesh crystals for the lower part.

This is possible because the application of a thin coat of the material produces small crystals while the application of a thick coat produces large ones. Any apparent failure of the finish to level out smoothly soon is rectified in the oven. The surface flows together as soon as heat strikes it.

Specific Oven Conditions

The crystals form only in the darkness of the oven, so the parts should not be allowed to air-dry for any length of time before being placed in the oven. They form only when subjected to the chemical effect of the incomplete combustion of open-flame gas burners, or in "foul air."

After formation of the crystals the parts may be subjected to a "high bake" and may be handled just as any baked japan finish is handled. This means that it would be necessary for the plant to be equipped with baking facilities and spraying equipment as this finish, while it can be applied by dipping, is much better sprayed.

Color Finishes

It is no longer considered a waste of time to finish parts in a becoming color. So these crystal finishes are being produced in various shades of green, maroon and a few other colors besides the dull black. With these, a number of exclusive and characteristic color shades may be made by intermixing any of them.

However, where a particular color is desired, it will not be possible to tint the material itself with colors, since the limited number of color pigments that are suitable must be incorporated when the material is being manufactured.

Clear Finishes

To meet certain conditions, the crystal material is also made available in clear or transparent form which makes it possible first to apply a rough colored base coat on the surface of the article and then apply a second coat of the transparent crystal japan. Thus almost any color effect desired is obtainable, providing there is no objection to the additional cost of the colored base.

It should be kept in mind that the application of the transparent coat will change the apparent color of the base coat. This is due to the yellow tinge of the transparent material. It will be well also to note the tendency of colors to darken under heat. Thus the base coat would change in color were it subjected to the baking operation necessary to harden the crystal finish.

Hardness, Spraying, Wood

However, if the hardening operation is not important, inexpensive equipment can be improvised to do the work in any color. As stated before, practically all of these specialty finishes are best applied by spraying—and most machines, instruments and parts are finished by this method. The crystal finish has another virtue. It may be manipulated to work on wooden as well as metal parts. A construction having a combination of materials may be finished uniformly providing the time and trouble to do some advance experimenting is taken to assure the ultimate results.

Crinkle Japan

Crinkle japan is another finishing material which possesses many

Remember what LINCOLN *said*

"You can fool some of the people all of the time, and all of the people some of the time, but you cannot fool all of the people all of the time."

Lincoln wasn't thinking of finishing materials when he made that famous statement . . . but had he been, he couldn't have hit the nail on the head with greater accuracy.

Inferior finishing materials will not fool all of the people all the time . . . so why jeopardize potential sales? Cheapness always comes home to roost!

Let our creative studio help solve your finishing problems. No charge . . . no obligation.

ROCKFORD VARNISH COMPANY

Rockford, Illinois

"NO TAMPERING WITH QUALITY"

of the properties of crystal japan. A special material is required to produce it. A baking oven, from which the "foul air" required in the manipulation of the crystal japan is excluded, is absolutely necessary. The parts are placed in the hot atmosphere of a heated oven while parts finished with the crystal japan must first be placed in an oven, the interior temperature of which does not exceed that of the room.

Applied with Glue Spreader

QUITE A LONG while ago, I remember seeing in INDUSTRIAL FINISHING, something about a painting machine which applied finishing materials to flat surfaces by means of rollers. I believe this method of finishing is very good for some classes of work, and indications are that it has been more widely used than some of us might think. Who, for instance, would think of a glue spreader, such as is used in coating veneers and core wood with glue for laminating, being used for applying stains, finishes and even preservatives to wood surfaces—and in many cases doing it to better advantage than could be done by either dipping or brushing. Just the same, it has been done, and I can see no reason why it will not continue to be done on certain low-priced flat work.—E. H. JOHNSON.

Heat-resistant finishes (both baked and air-drying) are in demand by several different manufacturers.

Breinig Brothers Sales Convention

The retail trade and industrial trade salesmen of Breinig Brothers, Inc., manufacturers of "Better Built" paint products and industrial coatings, met in a general sales convention held at the factory in Hoboken, N. J., during the week of January 22. A. R. De Vos, President, opened the convention with an address of welcome and discussed the new trend and possibilities of the paint industry.

The week's sessions were divided into three 2-day sessions, namely sales and merchandising meetings, which dealt principally with new day selling, and the Breinig Personalized Custom-Built Merchandising Plan. Two days were given to new products and water-proofing products, and the last two days' sessions were devoted to lacquer and industrial coatings. The sales convention terminated with a banquet held at the Empire Hotel, New York City. The convention was under the direction of Neil Cullinan, Sales Promotion Manager.

Breinig Bros.' salesmen photographed in a group while attending convention.

ADVERTISING PAGES REMOVED

M SEAS

that roar DESTRUCTION !

SO CALM THE WATER . . . so peaceful the scene . . . so stately the ship. Is it possible that danger lurks here?

Yes, the danger that has existed since ships first dipped their sturdy prows into the sea. It is the danger that hovers in salt air . . . that surges in salt water against the ship's sides. It is the toll that the sea exacts from every boat in peaceful calm or raging storm.

Science knows no way to avoid this toll completely, but it has discovered how to reduce it. After years of research du Pont chemists developed a better finish for boats that resists the destructive attacks of salt water and retains its beauty despite the raids of salt spray and air. Its name is DULUX Marine Finish.

Here is a notable achievement. But it is only one of many in du Pont history. In fighting the elements and the forces destructive to finishes, du Pont chemists have been responsible for many of the major developments in finishes in the last ten years: Duco for automobiles; Automotive DULUX for commercial vehicles; DULUX Mill White for factory interiors.

Through rigid control of raw materials and manufacturing processes and through pre-testing of every finish du Pont can supply finishes of uniform high quality capable of giving full protection to your products and your equipment and lasting beauty where appearance is important. Why not let us see if there is not a du Pont finish that will meet your needs perfectly?

E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware.

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For every industrial purpose

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Eliminates an Operation
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Nu-Seal Stain

1 "NU-SEAL" Stain provides a Stain and Sealing Coat in one Operation.

2 "NU-SEAL" Colors are fast to light, acid anilines being especially selected to give a permanent fade-proof color.

Send for free Sample

3 "NU-SEAL" Stain can be dipped, sprayed or brushed and will show more uniformity and transparency than any Water Stain or Oil Stain.

4 "NU-SEAL" Stain will give the same result in one application that is ordinarily obtained by dipping in a water stain and when this is dry applying a wash coat of Shellac or Sealer.

5 "NU-SEAL" Stain will dry much harder than a wash coat of Shellac and consequently will give much easier sanding.

6 "NU-SEAL" Stain is reduced with water, affording a large saving as compared with other reducing agents.

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« Tooling-up to Finish 100 Cabinets »

by J. U. Myers
General Manager, Udell Works*

OFFHAND, you might assume that any reasonably well-equipped finishing department is always tooled-up for the type of products the plant manufactures. Actually it isn't—not until the foreman plans definitely for each job before it's started through. New things are coming up all the time. In the products we make, for instance, we encounter new designs, different combinations of wood (including at times some metal and composition parts), changed construction and more modern types of ornamentation. And the same thing applies, I believe, to most other manufacturing establishments today. In the equipment, materials, tools, supplies and other facilities which are available, changes are occurring from time to time.

If you get down to specific details you will find that to put each job through with maximum efficiency and economy, the work must be analyzed first and then planned (on paper or in one's mind) as to operations by sequence and as to labor and time per operation; also as to material, supplies and equipment to be used, and the floor space over which the products move as the work goes through the shop.

*Indianapolis, Indiana

Suppose we consider an ordinary example in a typical small or medium-sized furniture factory doing either stock or custom work—or both. Comparatively small runs have been the rule recently, so we will consider a small job—say 100 medium-priced cabinets to be finished in a rich, dark, walnut-brown, lacquer-rubbed finish. The entire finishing job is to be completed within 3 to 3½ days, so the cabinets will be ready for delivery on the fourth day.

Each cabinet is about half the size of a flat-top office desk and all four sides must present an attractive appearance. The front has a door and three drawers, and the back closely resembles this same effect except for the hardware. The ends and top are flat and the four square legs are paneled and shaped at the bottom.

Four kinds of wood are represented in the exterior construction—figured walnut veneer, solid walnut, solid gum and willow. (Willow presents a splendid walnut appearance, if properly finished.) Drawer interiors are oak and they are finished in light natural oak color.

These 100 cabinets are delivered to the finishing room sanded clean and smooth, and the bottom ends of the legs are fitted with metal

domes to make them slide easily over the floor. When the cabinets arrive the foreman has already anticipated what's coming and has tooled-up his department and planned the work in detail so it will proceed rapidly and with clock-like precision according to the schedule which follows. Let it be understood, of course, that the workmen entrusted to this job are experienced, skilled, and dependable; they have good eyesight, use good judgment and they have the incentive to do their best work rapidly and safely. Floor space, spray booths and all necessary equipment, supplies and material are in readiness.

Operations by Number

No. 1—At spray booth No. 1 the operator, working single-handed, sprays the uniforming stain so expertly that the four different kinds of exposed woods are really made uniform in color. He uses a permanent lacquer-base stain, and sprays and handles a cabinet in 1 to 1½ minutes. This stain is a non-fading, non-grain-raising stain; it doesn't affect glue joints nor cause swelling of drawer fronts or doors. A one-hour period of drying follows.

No. 2—At spray booth No. 2, next in line, the operator sprays on the filler, having mixed it to suit the most porous wood—walnut veneer. Then he sprays it on skillfully with the idea in mind of uniforming the woods and keeping down to a minimum the waste material to be wiped off and the labor that will be necessary later in burlap rubbing and rag wiping. When the sprayed filler dries flat it is thoroughly rubbed and wiped. Thorough drying follows in a dry-kiln wherein the air is controllable as to temperature, humidity and circulation. Overnight drying is the usual thing after filling and "ragging-off."

No. 3—Lacquer sealer is sprayed on at the next booth in line. Then follows careful and thorough sanding, using No. 4/0 sandpaper. This is the one and only sanding operation in the finishing process (on the outside of the cabinets) therefore it must be a real smoothing-up job. Two men usually attend to this sanding, and when all the cabinets have been sanded their surfaces are carefully blown off with an air gun—preferably used in front of a suction hood or booth, so that all the dust will be immediately drawn from the room.

No. 4—At the right hand side of spray booth No. 4 two materials are available—a shading stain from a gravity-feed container, and a satin flat lacquer which comes directly from the steel drum by air pressure. Here the sprayer touches up with shading stain any sanded-through places or other light spots or light streaks that may need it. Then, with the lacquer gun, he sprays on the first lacquer coat. This is allowed to dry two or three hours.

No. 5—A second (and possibly a third coat, depending upon specifications) of the same satin flat lacquer follows. An overnight drying period is allowed before rubbing.

No. 6—The lacquer-finished surfaces are rubbed with paraffin oil and 3F pumice stone.

No. 7—The drawers are sprayed inside with a coat of shellac or suitable drawer finish; when dry, the interior surfaces are sanded lightly and finished with liquid wax.

No. 8—Following passage through the upfitting department, where hardware is put on, the cabinets are moved to a space

POWDERS

Bronze . Aluminum
Gold . Silver . Copper

SUNBRITE BRONZE POWDERS

If you want a whiter Silver Powder, write the manufacturers of Silver # 700. Hundreds of shades of special bronzes in stock for immediate delivery.

THE MITCHELL-MAYER CO., Inc.
601-7 So. Vandeventer Ave., St. Louis, Mo.

Bronze Powder, Gold, Aluminum, Silver, etc.

Finest Imported and Domestic qualities for all industrial purposes—any shade made to order. Complete stock carried. Prompt service—write.

Illinois Bronze Powder Co.
564 W. Monroe St. Chicago, Ill.

One Coat
Bronzing Lacquer #921

Eliminates use of metal surfaces. An unusual product of unusual merit. Write for more information.

WABASH PRODUCTS CO.
Terre Haute Indiana

For . . .
BLEACHING POWDERS
Write
INNIS, SPEIDEN & CO.
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Have you a message for this space. If so write us.

Industrial Finishing Mag.

BRONZE POWDERS

Gold and Aluminum and All Colors for All Classes of Work

H. KAHN & CO.
2222 N. 11th St. Philadelphia, Pa.

Superior quality Gold and Aluminum Powder for all purposes—

Ready mixed gold and aluminum paints. Gold, aluminum and copper in paste form.

CRESCENT BRONZE POWDER CO.
Ill. and LaSalle Sts. Chicago, Ill.

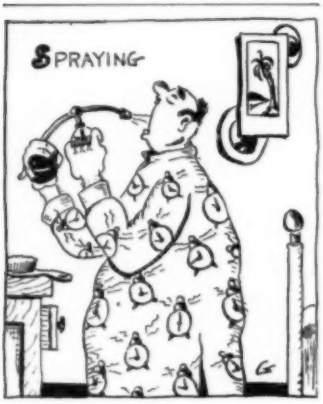
Advertise your particular product here. The cost is moderate—write us.

for inspection and for final touching up (or repairing with stick shellac) of any scratches or damaged places.

In conclusion, let me suggest that this tooling-up and planning in detail for every job and keeping the workmen "on their toes," so to speak, is desirable from several standpoints. In the first place the work is performed with greater dispatch and precision; the resulting cost figures are more accurate and dependable for use in making future estimates. And, last but not least, the finishing foreman's superiors and the men working under him are more favorably impressed with his ability, and he is in a position to get more consideration and cooperation from them.

Standard Varnish Works Sales Conferences

A General Sales Conference of the Standard Varnish Works and Toch Brothers—Eastern Division, which was held at the home office of the company, was concluded January 15th. It was attended by all executives, department managers, factory managers and 35 field salesmen.



J. Heath Wood, President, made an address of welcome in which he expressed an optimistic opinion for the immediate future.

The Conference was divided into three groups. Mr. W. C. Lawson was Chairman of the Industrial Division Meeting, Mr. E. Wander led the Toch Bros. group, and Mr. H. S. Bickford conducted the Trade Sales Division Meeting.

Interesting practical demonstrations of the company's leading products were made for the various sales divisions. An opportunity was afforded to inspect the factory in Staten Island, which is one of the largest establishments of its kind in the Eastern territory.

Smith-Mayer Corp.—Ovens, Air Conditioning

A January letter from C. F. Mayer, Treasurer of the above named company, whose address is 16374 Euclid Ave., Cleveland, Ohio: "This is to notify you that I have severed my connections as Vice President of The Foundry Equipment Co.

"With a former associate of mine, during my capacity as manager of the oven business at The Swartwout Co., we have formed The Smith-Mayer Corp. to engineer and manufacture industrial ovens, conveyors, air heaters, air conditioning and allied equipment.

"My associate, Mr. James Campbell Smith, was Pittsburgh Manager for The Swartwout Co. for a number of years, after which he became manager of the Detroit District for the McCann-Harrison Corporation. During the past three years, Mr. Smith has been designing and building industrial ovens, conveyors, air heaters, etc., under his name.

"During the past 15 years, Mr. Smith and the writer have, in our various connections, been responsible for the negotiation, engineering and installation of a great number of the country's largest core and mold drying, japanning, lacquer drying and general drying and conveying systems."

Ault & Wiborg Representatives

A letter from the St. Louis Branch of Ault & Wiborg Corp. announces that Messrs. H. K. Wiebusch and J. O. Carroll, formerly of Van Schaack Chemical Works Inc., which was taken over by the Ault and Wiborg Corporation, are now covering the southwestern territory for the Ault and Wiborg Corporation, under the jurisdiction of Mr. E. E. Ammon, Manager of the St. Louis Branch.

Baked Finishes on Die Castings

Practical Suggestions for obtaining a much Better Finished Product

by C. F. Scribner
Industrial Engineer

WHETHER BAKING or air-drying finish materials are applied in the finish of die-castings, the surface of the work to be finished must be clean. Finger prints on work ready for finishing may easily mean the loss of a good customer and the turning of profitable business elsewhere. Attention to cleaning will often remove finishing troubles.

Sandblasting, as a means for cleaning, is gaining in favor. This process removes the oil and grease, and also leaves the surfaces slightly roughened, so that the finishing material will adhere much better than to an even, smooth surface. This is important on such metals as aluminum, lead, and tin, which are of themselves more or less "greasy" in composition.

A weak caustic solution is often employed to advantage, but care must be exercised when using such material, as the caustic will not only dissolve the oil and grease and slightly roughen the surfaces but, if left in the bath too long, it will dissolve the zinc, aluminum, and some other metals.

The appearance of castings as withdrawn from the bath should be bright. If tarnished, it indicates too long immersion, which may mean pitting. The caustic solution should be kept at a temperature of about 160° F. Careful attention to this temperature will remove many troublesome and costly finishing problems.

Where baking finishes are applied to die castings following the cleaning process, it has been found that a pre-heating of such castings is desirable before applying the finish. The temperature of this pre-heating should be from 15 to 25° F. above that at which the baking process is conducted, and this temperature should be held for at least one-half hour. Pre-heating removes any oil or grease remaining after the cleaning process, as well as any gas or air in the cast parts.

When the finishing material is baked there is usually an expansion of gas or air and as a result pin-holes may appear on the surface. If castings are given the first coat as soon as they are cool enough after the pre-heating, then baked at a temperature somewhat lower than that of the pre-heating, many of the troubles usually encountered in finishing will disappear.

The composition of die castings to be finished by baking must be carefully studied in the effort toward securing better finishes, as each alloy presents problems of its own. Castings having a base of zinc, lead, or tin should not

be heated to a temperature in excess of 250° F., or the low melting-point alloy will "sweat" through the finish. Castings containing no tin can be heated somewhat higher, but here care must be used to prevent brittleness and crystallization.

With care taken to see that the baking temperature is lower than the pre-heating temperature, experiments on particular lots of die castings will develop the safe range of heating temperatures for turning out a better finished product; also, there will be eliminated many of the costly mistakes which are too prevelant in the average finishing department.

Finishing Baseball Bats

THERE are various processes of finishing bats—depending on volume of production and installation of equipment. On the better grade bats it is necessary to fill the grain and pores of the wood with a paste or semi-paste wood filler—natural filler, oak filler, or walnut filler, according to finish color desired. This operation is done either by dipping or rubbing the filler into the pores while the bat is revolving in a lathe, the latter being the slower process, but it works the filler into the pores probably better than the dip process, but for volume production with the filler at the right consistency, the dip does a very good job.

In preparing for the dip process, a shallow tank 10 or 12-in. deep, and 6-in. longer than the longest bat, and 18 to 24-in. wide, should be obtained. This can be made of heavy galvanized iron. A drip or drain board should be arranged back of the dip tank with slats or pegs to keep the bats apart while draining, and setting of the filler. This board or bench should be on a slant and covered with galvanized iron, allowing the surplus filler to drain back into the dip tank.

The paste filler should be mixed on the basis of 8 to 10-lbs. filler to a gallon of benzine or VM&P naphtha. Bats are submerged in the filler, allowed to soak for a few minutes and then removed and stood on end on a drip bench and allowed to dry 20 to 30 minutes. They are then placed in a speed lathe and the surplus filler is wiped off cross-wise of the grain, using burlap, excelsior or rags. After this operation the bats are stacked up and allowed to dry for 12 hours.

After the filler has dried, a coat

D H R ENAMELS AND UNDERCOATS

either in the oil or synthetic type, are made to meet the requirements of your finishing schedule. You may obtain them for Spraying, Brushing or Dipping and for either Air Drying or Baking. No matter which method you use you may be sure of complete and continued satisfaction.

DENNY, HILBORN & ROSENBACH
INCORPORATED
230-34 No. 12th St. Philadelphia, Pa.

of sealer should be applied. This can be done by the dip process or by "ragging" it on in the speed lathe. Whichever process is used, only a thin coat should be applied. For a sealer, white or orange shellac can be used; some firms use a lacquer sealer, or a combination of both—that is, a mixing lacquer, mixed equal parts lacquer and shellac, reduced with denatured alcohol. This makes a more elastic waterproof sealer than straight shellac, and makes a better bond for the succeeding coats of lacquer.

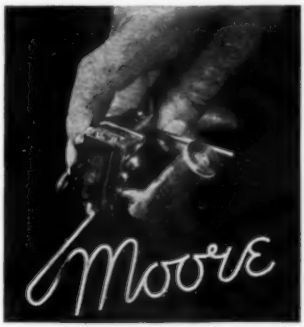
After the sealer is allowed to dry three to four hours, the bats are placed in the speed lathe and rubbed down with No. 2/0 steelwool. They are then ready for the finish coat, which should be a clear gloss waterproof lacquer. This should be dipped on lengthwise the same as the sealer. In dipping the finish coat, the bats should be allowed to drain from the opposite end from what the sealer drained. This allows a more uniform coating.

To give a dull rubbed effect after final coat of lacquer is dry, say four hours, place in lathe and rub down with the No. 2/0 steelwool, using a very little machine oil on the wad of steelwool.

For the cheaper grade finishes, the filler is omitted. In some cases an oil stain is used and then one or more coats of finish lacquer. For the small boys' bats (cheap ones) a one-coat dip of lacquer tinted with aniline dye is used.

In using the dip process for applying filler, care should be taken in keeping the filler well mixed, as the pigment settles to the bottom of the tank.—J. E. GREENE.

Explosion-proof lights are demanded for safety in spray booths.



FOUNTAIN STRIPERS A SUCCESS

"We made great strides in improving quality and appearance after using your equipment on enamel products," writes a typical user.

Finishing shops of all kinds make similar reports. Some talk of money saved, some about tripled production per man, some about cleaner lines, some about simplicity in design and operation.

Indestructible and fool-proof, a Moore Fountain Striper handles any material, makes 300 to 1500 feet of line on one filling. A few hours' practice is sufficient. Made in several sizes. For use on flat surfaces of wood, metal and glass. Make a start toward saving money — write for complete information and names of enthusiastic users.

DISTRIBUTORS

We are increasing our factory capacity and distributor organization. Inquiries are invited from distributors specializing in specific trades.

THE GENERAL INDUSTRIES CO.
Moore Fountain Striper Division
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Nail Hole Filler

FOR FILLING nail holes, small dents and blemishes in cabinet wood, previous to finishing, I suggest using stick shellac which is available in all colors to match the various cabinet woods. I have seen a small electric heater for warming the smoothing blades (burning-in irons) for applying the colored stick shellac. For large nail holes and similar deep places, it may be desirable to first fill up most of the void with a suitable plastic filler and, when this is solidified, fill in the shallow depression remaining with stick shellac that matches the particular wood used.

The well-known Plastic Wood, which has been on the market several years is an excellent filler for nail holes.

Along the line of cheaper materials there are fillers for which water is used as the diluent. In most cases these may be satisfactory, but sometimes water might prove detrimental in contact with bare wood surfaces. Just as plaster of Paris (partially-dehydrated gypsum) is the basis of patching plasters for wall work, it is also adaptable to woodwork, but should not be used merely as a plain-water paste, as this sets altogether too rapidly and would shrink away from the wood when it completely dries out.

I have used with perfect satisfaction, even for large and deep holes, a plain plaster of Paris mixture with gum arabic solution. This is merely a dissolving of gum arabic in warm water to make a mucilage of light body or consistency. This is the adhesive formerly used on postage stamps and high grade envelopes. I have also mixed fine sawdust with the plastic, but would judge that wood flour should be still better. The gum solution retards the natural fast-setting properties of plaster of Paris, prevents shrinkage and, when dry, the filling is exceedingly hard and tough.

There has been on the market for years a wood crack filler (water putty) in dry powder form for mixing when ready to use. This preparation is for checks, cracks, and holes in the wood of interior trim and similar work, and for cracks and seams in old and new floors. The dry powder is an intimate mixture or blending of the following:

Quartz Silica .....(parts)	10
Plaster of Paris.....	2
Dextrine	1½

The quartz silica is the same character of silica as used in the so-called "silex" paste wood fillers for furniture finishing. In this

NEW AND DISTINCTIVE COLORS
OF UNUSUAL BEAUTY ON
QUILTED MAPLE AND ASPEN WOOD
PRODUCED WITH
TWO NEW ACID STAIN POWDERS
Information and Samples on Request
THE GILBERT SPRUANCE CO.
Richmond and Tioga Sts. Philadelphia

mixture, dextrine is the binder (pulverized gum arabic could be substituted); dextrine is the cheaper material, now almost universally used for adhesives. Make a thick plastic paste of the above with water. The wood surface ought to be slightly moistened before applying this crack filler to assure best results. Apply with pressure, then smooth off the top with a putty knife. When dry carefully sand off flush with the surrounding surface.—E. PERRY.

Polishing Machines

WHERE polishing is involved as part of a metal finishing process, you have an abrasive operation calling for different provisions on different jobs. This is handled in different ways in different places, but where quantity production is in order on a standard item requiring a high polish, whether it be coil stock, strip stock, automobile bumpers, metal bicycle rims or what have you, it is becoming increasingly the custom of modern industry to use a high-speed polishing machine for the work—for high speed and lower unit costs naturally go together. Some of these machines are built on the so-called unit system; that is, as many units may be built into one machine as may be necessary to produce the particular finish wanted.—H. J. EDWARDS.

Wood Graining on Metal

IN TRANSFERRING wood grain designs to metal surfaces, one successful method is to first etch the wood with a mild acid, then paint it with a mahogany or other

This is the Emblem of Standard Quality in Finishes

METALLIC FINISHES

Write for a sample of our new line of METALLIC LACQUER ENAMELS. Furnished in: Gun Metal, Gold, Silver, Bronze, Brass, Copper, and Pastel Shades.

Our METALLIC LACQUER ENAMELS produce a beautiful lustrous finish with excellent adhesion to most surfaces, and good coverage in one coat. Can be polished or buffed to obtain a higher lustre.

H. V. WALKER CO.
Elizabeth, New Jersey

desired color. A rubber roll, 20 to 24-in. in diameter and as wide as the metal to be coated, is then rolled over the etched board and then onto the metal sheet. In this way a transfer of the exact wood grain to the surface of the metal is accomplished.—C.F. Scribner.

From Drums by Air

LAST FALL I noticed an item in INDUSTRIAL FINISHING regarding a pump which employed a hand-powered air cylinder for withdrawing material from drums. Probably such a pump would be convenient for use on drums from which small amounts of materials are to be taken. However, for removing materials from drums in larger amounts, I am much inclined to favor a pump that is attached to the drum in much the same way (only a few seconds for attaching) but which is operated entirely from the air line. This article is not submitted to question the value of the hand-powered pump, but only to call attention to the fact that what is best in one place may not be best in another.—J. E. HYLER.

Lacquer Thinners

IN A LEAFLET on this subject, as published by a nationally known manufacturer of lacquers and lacquer thinners, the following facts are disclosed:

"The purpose of using thinner in applying lacquer is to reduce the viscosity or thickness of the lacquer so that it may be sprayed on satisfactorily. When the lacquer has been applied, the thinner evaporates and is gone.

"The solids part of the lacquer (which is the part that requires thinning) is composed of pyroxylin (cotton) and gums. The thinner must act to cut both of these solid elements. Hence, thinners are composed of solvents and diluents—the solvents to act on the cotton in the lacquer and the diluents to dissolve the gums.

Something Distinctive . . . Appealing?

Finish With "Made in U. S. A."

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"The Standard of Quality"

An artistic and durable coating for automobiles, beverage dispensing units, toys, etc.—in natural color pearl, or in colors. Write us!

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65 Nassau St., New York, N. Y.

Ideal for striping and decorating furniture, toys, metal products, auto bodies, etc.

THE LIGHTNING CRAFTSMAN

ROTARY STRIPER

Every commodity manufacturer needs a striping tool to facilitate the decorating operation. Here's one that even inexperienced help can use. Just "roll on the stripe." The price ranges from $12.50 to $19.50. Send for descriptive literature.

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Kindly mention INDUSTRIAL FINISHING when writing advertisers

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Improved from year to year—and now modernized to meet your present requirements

Improved O'Shelac PLUS, with its superiority over pure shellac, sands quickly and easily and seals perfectly.

Improved O'Shelac PLUS is tough, durable and waterproof, and when two or more coats are applied, it results in a final finish equal to lacquer.

Your request for samples or demonstration will receive prompt attention.

ADVANCE PAINT COMPANY

Indianapolis, Indiana

The TAYLOR SYSTEM of COLOR HARMONY

COLOR HARMONY exerts a powerful influence on sales of finished articles—

. . . and the Taylor System of Color Harmony solves the problem of selecting color combinations easily, quickly and always harmoniously. This system is based on fundamental, natural color laws, but is reduced to such simple chart form, that anyone can readily understand and use it—there are no books to read—it's right before you in color. No waiting. No guessing. You simply select the base color for your scheme and the Taylor Keyboard automatically shows all the colors that harmonize with your base color. *Discords of color cannot appear through the mask.*

Chart "A" of the Taylor color Harmony Keyboard is 22 x 15 inches and shows 96 different colors. It is accompanied by two black cardboard masks which can be adjusted to show four different tones of each color. Price $5.00.

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802 Wulsin Bldg., Indianapolis, Ind.

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Special Formulating

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Exposure Tests — Inspections and Reports
Merchandise Research
Actual exposure test is best! Write us for full details regarding sunlight and atmospheric tests on your product or material. Constancy of climatic conditions insures accuracy and quick determination of durability and permanency. "BE SURE IT IS SOUTH FLORIDA TESTED"
Box 387, Miami, Fla.
Member A. S. T. M.

WE have specialized for 15 years in manufacturing electrical heating elements and units for all commercial purposes. Manufacturers using electrical accessories of any kind in connection with their products are invited to communicate with us. We will manufacture according to your own specifications or will design and submit our own suggestions for what you have in mind . . . OP-AL ELECTRIC and MANUFACTURING COMPANY, Indianapolis, Indiana.

"It is therefore evident that to get best results a thinner should be used which has been properly made to work with the lacquer being used—with solvents in the thinner in correct proportion to the cotton in the lacquer, and diluents in the thinner in the right proportion to the gums in the lacquer.

"It is when thinner not properly balanced to the lacquer is used that you fail to get the complete satisfaction that you can expect when using a complete system, one part made particularly to work with every other part of the system."

This company makes several grades of thinners, each one properly balanced to work with other products in its line. Different grades are produced to meet different working conditions and different classes of work.

What Spray Pressure

MANY FINISHERS neglect one of the most important points of their art—the air pressure they use in spraying. This is more apparent when they change from one finishing material to another, than it is where the same material is used continuously.

Patented

GUARD YOUR HEALTH against the dangers of spray mists!

Bulletins from the U. S. Government and safety councils warn against the danger of inhaling lacquer and paint fumes. Wearing a PULMOSAN RESPIRATOR defeats the danger—comfortably and inexpensively. Weigh as little as 2½ oz. Permits easy, natural breathing of pure air. Has highest safety rating. Many models.

● *Write for details and prices.*

Pulmosan Safety Equip. Corp.
176 Johnson St. Brooklyn, N. Y.

PULMOSAN RESPIRATORS

Because the difference in specific gravity and viscosity of finishing materials affects the proper spraying to a great degree, it is essential that the air pressure be regulated to suit each different material so that it will properly atomize, since each material will require a different air pressure.

The following pressures have been found from experience to be satisfactory:

Heavy-bodied materials	10 to 20-lbs.
Low-viscosity lacquers	30 to 40-lbs.
Clear furniture lacquers	50 to 75-lbs.
Lacquer enamels	60 to 80-lbs.
Primers	60 to 90-lbs.

The style of the spray gun and the type of equipment have a great deal to do with the best actual air pressure required, but the above figures will serve as a basic standard in most cases.

Lacquers having solvents with high boiling points, which are not so volatile as others, may be successfully sprayed at 100-lbs. pressure.

Many spray operators set their air gauges at about 60-lbs. pressure and leave them there for all classes of work and all types of materials. Reasonable attention to air pressure will repay any effort in the better finishing which it produces.—C.F.Scribner.

Safety Faucets

I SUPPOSE there is not a shop to be found anywhere that has not experienced losses more or less serious through someone having inadvertently left a faucet open. One of the worst cases I have ever seen was that of an oil faucet left open, which literally flooded the machine room floor with oil before somebody noticed it. It happened when an operator, somewhat flighty in nature, was filling an oil can and was suddenly called away by the foreman.

Manufacturers interested in the latest developments in Industrial Finishes should become acquainted with

Permatex Air Drying Enamel for use on machinery, gasoline pumps, stationary equipment. Dries out of dust in 2 hours.

Kromlac Wood and Metal Lacquer of great durability and adhesion.

Duroleen — One Coat Metal Baking Enamel. Produces a hard, smooth, scratch resisting finish.

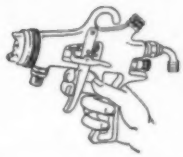
Duroflex Synthetic Baking Enamel covers solid in one coat with a very tough and flexible coat that has unusual durability.

Chromgloss Enamel can be used on wood or metal and has excellent covering qualities. Recommended for its non-chipping qualities. Air Dry or Bake.

Write for further details.

McDOUGALL-BUTLER CO., Inc.
DIVISION INDUSTRIAL FINISHES
BUFFALO, N. Y.

MARVELOUS NEW
PAINT SPRAY GUN



Requires no air regulator, handles all types paint, lacquer, etc. Lighter weight, widest spray, perfect atomization; also air purifiers, 5 and 10 gal. pressure outfits, accessories, etc. Write for Catalogue and prices.

THE ALEXANDER MILBURN COMPANY
1402 W. Baltimore St.
BALTIMORE, MD.

Such possibilities of the ordinary type of faucet has led some firms to adopt the use of a faucet designed on an entirely different principle—operating with a convenient little palm lever which closes automatically when released. The palm lever operates a plunger extending through the faucet body, which in turn opens the valve.—E. J. HENRY.

Letters from I. F. Readers

(Continued from page 7)

but you have failed to suggest to your readers the installation of the most important and widely used fire protection device available—"The Automatic Sprinkler." We have equipped many finishing plants and they are practically immune from serious fire. Would it not be desirable in future articles to give your readers some information about automatic sprinklers which will be of value to them? —A. M. Lewis, President of Globe Automatic Sprinkler Co.

Paint Formulas

As we have our own paint-grinding outfit, we are wondering if you publish a book or if we could secure formulas from you for the grinding of paints for our silk-screen printing purposes, for cardboard, metal, cloth and items of this kind? We also would like to have a formula for the making of transparent base in the use of these paints for silk-screen purposes.—C.&Co. (Selling Helps for Dealers).

Picture Frame Finish

I would like to get the name of a good finish to be used on new picture frames—to build up and fill up. I would much rather have something that is soluble in alcohol, and it is to be used through a spray gun. Also, I want a good alcohol finish to be used over metal leaf. . . . have used shellac but it did not prevent the metal leaf from tarnishing.—F. B. (Paint Spray Engineer).

Suede Finish in England

We note in your issue for December 1933, page 4, an inquiry from "W. B., Surrey, England" for suede finishes. Since we are in a position to supply such a finish, we should very much appreciate it if you would let us have the full name and address of the inquirer, with whom we shall be pleased to get in touch.—Nobel Chemical Finishes, Ltd., Slough Bucks. ENGLAND.

Drying System Wanted

For some time we have been considering thoroughly investigating the practicability of a forced-drying system for our finishing room. We are not at all familiar with even the smallest detail of the manner in which a system of this kind works, and are very much interested in getting in touch with those concerns who can give us this information.—N.T. Mfg. Co. (Furniture).

SUNOCO Spirits
SUN OIL COMPANY - 1608 WALNUT ST. - PHILADELPHIA

This is the New No. 80 Respirator

Try It! You'll Buy It!

CHICAGO EYE SHIELD CO.
2300 Warren Blvd. Chicago, Ill.

Fluid Tinting Colors May Cause Trouble

SOME time ago, in this magazine, I noticed a short article about the new Fluid Tinting Colors. On the face of it, the innovation of Fluid Oil Colors appears to be desirable, and may eventually prove to be preferable to what we now have; but to me the first thought is that this change was probably advocated by the paint manufacturers without due consideration to problems of the practical painter, decorator, and finisher.

These colors are made softer in consistency by increasing the proportion of vehicle. More color will have to be used in shading, because it contains less coloring pigment. Obviously, the larger amount of weaker colors, such as ochre, to produce the deeper shades, as for instance buff and tan, will carry a large amount of oil into the paint and require further addition of liquid drier. This is only one example to convey the significance of the thought; and there will be many others to come up in practice.

In the case of dark shades of gray, requiring a preponderance of black tinting color in which the percentage of pigment always is very low, the excessive addition of linseed oil must surely reduce the normal consistency of the paint. With oil-type house paints this is not apt to be serious, but how about other paints?

The same buff or tan alluded to, for a flat wall paint, is likely to become an eggshell finish instead of flat; or as an enamel undercoat, will be retarded considerably in drying hard, and will sand gummy. Varnish-type enamels plus too much raw linseed oil, must surely sag and run, and even with the addition of drier, they are likely to hold an objectionable tackiness and remain soft for several days, finally drying hard but with impaired luster. Colors in raw oil, because they do not thoroughly combine with varnish, generally float and streak badly in varnish-type gloss coatings, and

ENAMELS IMPERVIOUS IVCO TRADE MARK PRODUCTS LACQUERS VARNISHES

for Industrial Use

Pyroxylin Lacquer

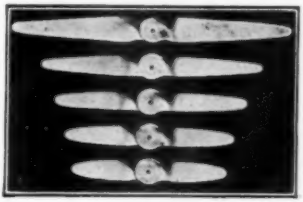
Finishing Varnishes
Synthetic Enamels
Baking Enamels
Primers and Surfacers

Consult us on those Special Finishing Problems
~ ~We Can Help You

IMPERVIOUS Varnish Company

Koppers Bldg., Pittsburgh, Pa.

Aeroplane Type Exhaust Fan Propellers



30 inch.....	$8.00	24 inch.....	$6.00
28 inch.....	7.00	18 inch.....	4.50
20 inch.....	5.00	16 inch.....	4.00

Made of Nickel Alloy Aluminum
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Guaranteed in every respect.

Send for descriptive circular and new low price on Complete Fans or parts to make any size exhaust or ventilating fan.

UNIVERSAL MFG. CO.

324 W. 10th St. Indianapolis, Ind.

thereby cause a great deal of difficulty in shading.

Paint manufacturers have tinting colors in varnish as also in oil vehicle, but craftsmen really have only the oil-type, unless in an emergency they resort to the quick-drying color-in-japan which requires thinning with turpentine; these are not always freely miscible with certain types of enamel, and the admixture of japan color, plus turpentine, causes quick-setting and pulling under the brush, poorer leveling, and a "lack-luster" or semi-gloss effect.

Unless paint manufacturers continue the pastier consistency of oil colors special for tubes, they will have to anticipate the difficulty and complaints that surely will ensue from a separation of the vehicle and pigment, eventuating in hardened color that is not usable.

The sign painter who uses regular colors in oil, breaks up his paste with varnish and japan in order to gain the quicker and firmer drying so he can cut in without smearing. Adding varnish and japan to fluid colors will not only make his paint impracticably thin, but will also reduce the opacity which is very essential in his work, because frequently the new job must block out the old background.

The foregoing is only an impromptu commentary, but with sufficient serious thought back of it to make it pertinent to the impending situation. —E. PERRY.

Colors at Paris Auto Show

The special feature of the Paris Automobile Show, from the color point of view, is the dethroning of black as the most prevalent color and the remarkable progress made by grey. Blue and grey have made remarkable progress. Grey appears in all kinds of shades; it is also mixed with blue and green, influencing those colors to a certain extent.

Dark blue is still being used but not to such an extent as before; lighter shades of blue are more prevalent. Maroons are generally reddish; but yellowish maroons, which were practically non-existing in previous years, are now increasing in number. Beige gives the impression of making a timid comeback.

There are but few real yellows, colors in that family verging generally into ivory, cream and white. This year, a few more cars than usual are using colors mixed with pearl essence, either grey to give an appearance reminding of gun metal, or other colors such as blue.

The trend of decoration schemes

FINISHES

THE MEARL CORPORATION
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Try this electric knife heater for 30 days . . . at our expense—

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is toward simplicity, continuing, therefore, along the same lines as indicated last year. The system of using contrasting colors, either between the body and the hood or the lower and upper parts of the body, or the body and the fenders, has been given up. Color schemes are much more simple and much more uniform, and the impression of greater length of the car is generally obtained through resorting to the molding which is carried over, as usual, from the body to the hood with very thin stripes of color. The effect, to many, is much more pleasing to the eye than the violently contrasting colors that have been used in the past.

Colored fenders are to be found this year in much greater quantity than in previous years. They are not of contrasting colors but of the color of the car itself, especially if that color is a light one. Black fenders and colored ones are practically in equal numbers, the fenders being of uniform color with no striping.

Very little striping is to be found on louvers—this in accordance with the general simplicity in decoration prevailing at this year's show.

As to decoration of the wheels, it has also become much more simple. Disc wheels, which predominate in number, either remain the color of the metal or are finished uniformly of the same color as the car, with no more circles of contrasting colors as in the past. Wire wheels are either finished the color of the car or retain their white metallic appearance if unfinished.—Automobile Color Index (Du Pont).

Bristol Co. in Canada

The Bristol Co., Waterbury, Conn., announces that in order to serve the Canadian market still better and to expand and consolidate its present Canadian service laboratory of 12 years standing so as to include sales, service and manufacturing, a separate company, The Bristol Co., of Canada, Ltd., has been incorporated. Factory and general headquarters will be located at 64 Princess St., Toronto, Ont., where Bristol recording, indicating and control instruments will be made. Mr. J. S. Mayberry, graduate engineer of Toronto University, and for 10 years with the parent company, has been appointed manager.

DeVilbiss Man Visits Europe

W. F. Gradolph, General Sales Manager of The DeVilbiss Co., sailed Feb. 3 on the *Rex* for a month's business trip through Europe—to visit European agents of the company.

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For finishing jobs requiring the use of small portable spray painting equipment, Spra-more Junior gives unequaled performance. Handles any type of material. Ruggedly constructed to give long wear. Single unit housing. No belts or universal joint. Wick oiling throughout. Weight 37 lbs. Send for details.

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Operates from electric light socket and is furnished with vapor-proof or enclosed type motor, as desired. Propeller blade is nickel alloy aluminum. Height 46-in., weight 70 lbs., floor space 38-in. triangular. Price very reasonable.

Send for price, descriptive circular or for any additional information desired

UNIVERSAL MFG. CO.
324 W. 10th St. Indianapolis, Ind.

Industrial Finishing
MAGAZINE

Distributed to Executives and Foremen Finishers in industrial plants where finishing coats are applied with finishing equipment

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EDITORIAL

Another Angle to Fire Safety

One side of the fire protection problem in the finishing room and adjacent areas contemplates the most careful avoidance of sparks of any kind, of abnormally high temperatures, of oily waste and other things that might cause spontaneous combustion. But another side, less heard about perhaps, is none the less important; it has to do with exposing inflammable and therefore hazardous liquids just as little as is possible. Where it is necessary to keep or to transfer such materials in or through locations that may be hazardous, then it is best to have them in containers that will keep them safe. So many and various are the containers available for this purpose, that there is no question as to one being able to make a suitable selection in any case.

Color Pulls More Attention

Color's effectiveness in pulling attention is being utilized in many interesting ways. For example, at an exhibit of sheet metal products, which consisted chiefly of modern heating and ventilating equipment, one hot-air furnace for the home had an attractive front in dark green crinkle and gold. In conventional black it would have appeared very ordinary and uninteresting. In crinkle finish colors it attracted spectators and gave the demonstrator an opportunity to tell them about the furnace's several merits and its new mechanical improvements, which were not apparent at first glance.

* * *

In January INDUSTRIAL FINISHING, page 7, a letter asking for names of Color Card firms not only pulled replies from color card and paint advertising firms, but also a letter informing us that a man in California had recently invented a method and machine for transferring colored lacquers and colored paints (in suitable size strips) directly onto the face of printed color cards—thereby dispensing with the necessity of having to paste separate colored paper samples onto the printed cards. A sample color card made this way was enclosed to show the result, which is very neat and attractive.

* * *

An announcement has just come to our notice to the effect that the British Color Council has com-

pleted a set of standard color cards which will remain standard for all time.

Research work has been carried on intensively during 18 months by the British Color Council. It was necessary to collate all the various samples of colors bearing the same name, investigate which sample was the truest representative of the color under consideration, and then go into the question as to whether such a color had been known previously by another name or names.

The colors and shades will be permanent dyes on pure ribbon silk, and mounted. Silk, being semi-gloss, permits better comparison with surfaces that are either high gloss or practically flat, whereas it is very difficult to compare glossy colors with flat colors.

Large Users of Finishes

Sanitary requirements for bottled beverage plants demand that buildings and equipment, trucks, bottle boxes, etc., be regularly renovated. For that reason, the bottled carbonated beverage industry is a large user of paints, varnishes, enamels, rust preventatives, and of many chemicals for cleansing.

Explosion - Proof Switches

There is little use of being careful about motors in finishing rooms, and insisting that they be of the explosive-proof type, unless equal care is given the electric switches. The usual method of preventing an arc, when a knife switch is opened or closed, is to throw the switch as quickly as possible. However, the only way to be really safe with an electric switch in a room containing vapors of explosive nature, is to inclose the switch in a vapor-proof box, operating it by means of an outside handle. Tumbler switches of this type are already on the market and in use in various finishing rooms.

Responsibility

What is to be done when the finish goes bad on $200,000 worth of high-priced, showy merchandise within the first year's service? Refinish, of course, but who is going to pay for the job? The finish is supposed to last longer than one year, but in the instance we have in mind the top color coat loosened from the undercoat and began to flake off within less than a year.

The full details of the story are not at hand, but the answer to the second question is known. The manufacturer of the finishing materials assumed full responsibility; he furnished all the paint remover and new finishing materials, including transfer lettering, and paid for all the labor required to remove the finish and refinish the goods like new—only better from the standpoint of durability.

Here we have a fine example of what responsibility can mean on the part of a concern that furnishes finishing materials and gives directions for using them. In this instance, something went wrong somewhere in the use or application of the original finish, but fortunately for both the manufacturer of the merchandise and his customers, the paint firm was a responsible company and assumed all the responsibility for the "performance" of its products, thereby saving its customers and the ultimate purchasers of the finished merchandise a tremendous refinishing cost.

Refinishing

In the case cited in the preceding article, and in numerous others which are coming up from time to time in various other industries, it's obvious that refinishing is an important factor in Industrial Finishing. Often it becomes a large scale operation, involving the use of large quantities of paint remover and finishing materials, the employment of air conditioned rooms, spray equipment, decalcomanias and, in some cases, baking ovens and auxiliary apparatus. Often manufacturers who do new finishing also do refinishing. In fact, during slack times many manufacturers not only welcome but solicit refinishing business to help keep their finishing departments profitably employed.

An eastern specialty manufacturing concern wants one or more added products to manufacture—

WHY ARE YOU ASKING FOR CASTOR-OIL ?
WHY I WANT TO LUBRICATE THE CASTORS ON A BED.
MISTRESS (TO NEW SERVANT) DO YOU OBJECT TO CATS AS HOUSEHOLD ANIMALS ?
NEW SERVANT— NO. I FIND 'EM A GREAT HELP WITH THE DISHWASHIN'.
IF YOU HAD FIVE BUCKS WHAT WOULD YOU DO ?
I WOULD QUIT HUNTING
WHAT DO YOU THINK OF OUR FRENCH STYLES ?
JUST SHOWS THAT YOU MAKE A BARE LIVING
TWO-TONE FINISH.
BING
BONG

preferably "one that sells at a large unit price, has adequate patent protection, and one that commands a sufficient margin of profit to warrant the development cost." The concern is ideally equipped to take over a new product, either a machine or process, complete the development work, improve the patent protection, and finance the manufacturing and selling of it.

Finishing Stove Plate

IN ENAMELING stove plate it has been found satisfactory to immerse the parts in a weak solution of sulphuric acid in order to remove oxide and scale. This is then followed by a thorough washing and neutralizing with lime and hot water. Care must be taken to see that rusting does not occur after this washing.

Quick drying, with a hot blast, usually will prevent any rusting until the parts reach the enameling room. Another danger which must be avoided is the inclusion of gas formed during pickling. Such included gas may be released after enameling, with resulting imperfect work. Thorough and repeated washings have been found to overcome this difficulty.

Classified Advertising

Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

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By manufacturer of complete line enamels, undercoats, varnishes, lacquers and synthetics. Must have established industrial trade. All territories open. Commissions paid weekly. Address IF-505, care Industrial Finishing.

SALESMAN

Calling on furniture manufacturers wanted to represent well-established shellac manufacturers. Address IF-506, care Industrial Finishing.

SALESMAN WANTED

With practical knowledge of woodfinishing. Full line stains, shellac, wood fillers, lacquers, etc. Must have following. Commissions highly remunerative. In replying advise territory covered and past connections. Address IF-503, care Industrial Finishing.

PRACTICAL VARNISH MAKER

Wanted to take charge of medium sized varnish plant located in East. Must be experienced on furniture varnishes, grinding liquids, and synthetic varnishes. State past connections, references, and salary expected. All communications will be considered confidential. Address IF-504, care Industrial Finishing.

VARNISH CHEMIST

We wish to engage the services of a young varnish chemist not over 30 years old. The man we want should have had at least three years' experience in analyzing, formulating and testing furniture and industrial varnishes. This position is open on account of a constant growth of our varnish departments and offers a bright future to the successful applicant.

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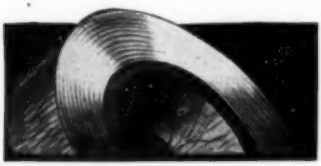

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